Example 180.

A two-component polymerization system was prepared giving a reactant ratio of monomer:procatalyst:activator = 25,000:1:2. Component A: LiWCA-H (9 mg) was dissolved in 0.7g of triethoxysilylnorbornene and 19 g of rubberized hexylnorbornene (1 wt. % EPDM). Component B: 2.5 mg (π-allyl)Pd(O_2CCF_3) PCy_3 was dissolved in 0.3 g triethoxysilylnorbornene. A and B components were mixed at 70°C. The following reaction parameters describe the reaction: t_{gel} = 230 s, t 108°C = 230 s, t 203°C = 345 s, t_{Tmax} = 465 s, t_{gel} = 108°C, t_{Tmax} = 253°C. A solid puck was obtained. Yield by TGA = 93.9%.

Example 181.

A two-component polymerization system was prepared giving a reactant ratio of monomer:procatalyst:activator = 25,000:1:2. Component A: LiWCA-H (2.4 mg) was dissolved in 0.7g of triethoxysilylnorbornene and 19 g of rubberized hexylnorbornene (1 wt. % EPDM). Component B: 1.7 mg (π-allyl)Pd (O_2CCF_3)P (i-Pr)$_3$ was dissolved in 1 g hexylnorbornene. A and B components were mixed at 53°C. The following reaction parameters describe the reaction: t_{gel} = 8 and t_{Tmax} = 255°C. A solid puck was obtained. Yield by TGA = 96.7%.

Example 182.

A two-component polymerization system was prepared giving a reactant ratio of monomer:procatalyst:activator = 20,000:1:1. Component A: LiWCA-H (4 mg) was dissolved in 9 g of ethylnorbornene. Component B: 1.9 mg (π-allyl)Pd (O_3SCF_3)P(i-Pr)$_3$ was dissolved in 3 g ethylnorbornene. The activator/monomer solution was degassed under vacuum prior to mixing with the procatalyst. A and B components were mixed at 23°C. The following reaction parameters describe the reaction:

t_{gel} = 390 s, $t_{100°C}$ = 407 s, $t_{204°C}$ = 415 s, t_{Tmax} = 425 s, t_{gel} = 51°C, t_{Tmax} = 213°C. A solid puck was obtained.

Example 183.

A two-component polymerization system was prepared giving a reactant ratio of monomer:procatalyst:activator = 20,000:1:1. Component A: LiWCA-H (3.4 mg) was dissolved in 1.0 g butylnorbornene. Component B: 1.5 mg (allyl)Pd(O_3SCF_3)P(i-pr)$_3$ was dissolved in 8.5 g butylnorbornene and 0.31 g norbornadiene. A and B components were mixed at 25°C. A solid object was obtained. Yield by TGA = 94.1%. Swell in toluene overnight: 158%.

Example 184.

A two-component polymerization system was prepared giving a reactant ratio of monomer:procatalyst:activator = 20,000:1:1. Component A: LiWCA-H (3.4 mg) was dissolved in 1.0 g butylnorbornene. Component B: 1.4 mg (allyl)Pd(O_2CCF_3)P(i-pr)$_3$ was dissolved in 9.0 g butylnorbornene. A and B components were mixed at 25°C and the following reaction parameters describe the reaction: t_{gel} = 4:00 min., $t_{100°C}$ = 4:37 min., $t_{200°C}$ = 4:40 min., t_{Tmax} = 5:00 min., t_{gel} = 38°C, t_{Tmax} = 210°C. A solid object was obtained. Yield by TGA = 96.7%.

Example 185.

A two-component polymerization system was prepared giving a reactant ratio of monomer:procatalyst:activator = 20,000:1:2. Component A: LiFABA (5.8 mg) was dissolved in 0.71 g triethoxysilylnorbornene. Component B: 1.4 mg (allyl)Pd(O_2CCF_3)P(i-pr)$_3$ was dissolved in 9.5 g butylnorbornene. A and B components were mixed at 45°C and the following reaction parameters describe the reaction: t_{gel} = 20 s, $t_{100°C}$ =

23 s, $t_{200°C}$ = 24 s, t_{Tmax} = 30 s, t_{gel} = 71°C, t_{Tmax} = 222°C. A solid object was obtained. Yield by TGA = 94.4%.

Example 186.

A two-component polymerization system was prepared giving a reactant ratio of monomer:procatalyst:activator = 20,000:1:2. Component A: LiFABA (5.8 mg) was partially dissolved in 0.71 g triethoxysilylnorbornene. Component B: 1.4 mg (allyl)Pd(P(*i*-Pr)$_3$)P(i-pr)$_3$ was dissolved in 9.5 g butylnorbornene. A and B components were opened to the air, stirred for 5 min., mixed at 25°C and the following reaction parameters describe the reaction: t_{gel} = 3:00, $t_{100°C}$ = 3:36 min., t_{Tmax} = 4:00 min., t_{gel} = 40°C, t_{Tmax} = 197°C. A solid object was obtained. Yield by TGA = 95.9%.

Example 187.

A two-component polymerization system was prepared giving a reactant ratio of monomer:procatalyst:activator = 20,000:1:1. Component A: LiWCA-H (3.4 mg) was partially dissolved in 1.0 g butylnorbornene. Component B: 1.4 mg (allyl)Pd(O_2CCF_3)P(i-pr)$_3$ was dissolved in 9.0 g butylnorbornene. A and B components were mixed at 45°C and the following reaction parameters describe the reaction: t_{gel} = 17 s, $t_{100°C}$ = 21 s, $t_{200°C}$ = 22 s, t_{Tmax} = 40 s, t_{gel} = 58°C, t_{Tmax} = 222°C. A solid object was obtained. Yield by TGA = 92.3%.

Example 188.

A two-component polymerization system was prepared giving a reactant ratio of monomer:procatalyst:activator = 20,000:1:1. Component A: LiWCA-H (3.4 mg) was dissolved in 1.0 g butylnorbornene. Component B: 1.5 mg (allyl)Pd(O_3SCF_3)P(i-pr)$_3$ was dissolved in 8.9 g butylnorbornene and 0.10 g dicyclopentadiene. A and B components

were mixed at 25°C and the following reaction parameters describe the reaction: t_{gel} = 12 s, $t_{100°C}$ = 16 s, $t_{200°C}$ = 20 s, t_{Tmax} = 45 s, t_{gel} = 40°C, t_{Tmax} = 213°C. A solid object was obtained. Yield by TGA = 96.4%.

Example 189.

LiWCA-H (3.4 mg) and 1.4 mg (allyl)Pd(O_2CCF_3)P(i-pr)$_3$ were combined in 1 ml methylene chloride and stirred for several minutes. This was added to 10.0 g butylnorbornene (reactant ratio of monomer:procatalyst:activator = 20,000:1:1) at 25°C and the following reaction parameters describe the reaction: t_{gel} = 1:00 min., $t_{100°C}$ = 1:10 min., $t_{200°C}$ = 1:12 min., t_{Tmax} = 1:30 min., t_{gel} = 40°C, t_{Tmax} = 209°C. A solid object was obtained. Yield by TGA = 96.3%.

Example 190.

LiFABA (5.8 mg) and 1.4 mg (allyl)Pd(O_2CCF_3)P(i-pr)$_3$ were combined in 0.25 ml methylene chloride and stirred for several minutes. This solution was added to 10.0 g butylnorbornene (reactant ratio of monomer:procatalyst:activator = 20,000:1:2) at 45°C and the following reaction parameters describe the reaction: t_{gel} = 5 s, $t_{100°C}$ = 7 s, $t_{200°C}$ = 9 s, t_{Tmax} = 25 s, t_{gel} = 60°C, t_{Tmax} = 222°C. A solid object was obtained. Yield by TGA = 92.6%.

Example 191.

A two-component polymerization system was prepared giving a reactant ratio of monomer:procatalyst:activator = 20,000:1:1. Component A: LiWCA-H (3.4 mg) was dissolved in 1.0 g butylnorbornene. Component B: 1.8 mg (allyl)Pd(O_3SCF_3)P(cyclopentyl)$_3$ was dissolved in 9.0 g butylnorbornene. A and B components were mixed at 25°C and the following reaction parameters describe the reaction: t_{gel} = 23 s, $t_{100°C}$ =

29 s, $t_{200°C}$ = 30 s, t_{Tmax} = 50 s, t_{gel} = 49°C, t_{Tmax} = 217°C. A solid object was obtained. Yield by TGA = 96.3%.

Example 192.

A two-component polymerization system was prepared giving a reactant ratio of monomer:procatalyst:activator = 20,000:1:2. Component A: LiFABA (5.8 mg) was dissolved in 0.71 g triethoxysilylnorbornene. Component B: 1.8 mg (allyl)Pd(O_3SCF_3)P(cyclopentyl)$_3$ was dissolved in 9.0 g butylnorbornene. A and B components were mixed at 25°C and the following reaction parameters describe the reaction: t_{gel} = 29 s, $t_{100°C}$ = 36 s, $t_{200°C}$ = 38 s, t_{Tmax} = 60 s, t_{gel} = 65°C, t_{Tmax} = 226°C. A solid object was obtained. Yield by TGA = 94.2%.

Example 193.

A two-component polymerization system was prepared giving a reactant ratio of monomer:procatalyst:procatalyst:activator = 20,000:0.5:0.5:1. Component A: LiWCA-H (3.4 mg) was dissolved in 1.0 g butylnorbornene. Component B: 0.7 mg (allyl)Pd(O_2CCF_3)P(i-pr)$_3$ and 0.8 mg (allyl)Pd(O_3SCF_3)P(i-pr)$_3$ were dissolved in 9.0 g butylnorbornene. A and B components were mixed at 25°C and the following reaction parameters describe the reaction: t_{gel} = 23 s, $t_{100°C}$ = 30 s, $t_{200°C}$ = 34 s, t_{Tmax} = 50 s, t_{gel} = 43°C, t_{Tmax} = 207°C. A solid object was obtained. Yield by TGA = 94.9%.

Example 194.

A two-component polymerization system was prepared giving a reactant ratio of monomer:procatalyst:activator = 20,000:1:1. Component A: LiWCA-H (3.4 mg) was dissolved in 1.0 g butylnorbornene. Component B: 1.8 mg (allyl)Pd(O_3SCF_3)P(cyclopentyl)$_3$ was dissolved in 8.5 g butylnorbornene and 0.5 g butenylnorbornene. A and B

components were mixed at 25°C and the following reaction parameters describe the reaction: t_{gel} = 15 s, $t_{100°C}$ = 19 s, $t_{200°C}$ = 21 s, t_{Tmax} = 40 s, t_{gel} = 52°C, t_{Tmax} = 221°C. A solid object was obtained. Yield by TGA = 95.7%.

Example 195.

A two-component polymerization system was prepared giving a reactant ratio of monomer:procatalyst:activator = 20,000:1:1. Component A: LiWCA-H (3.4 mg) was dissolved in 1.0 g butylnorbornene. Component B: 1.8 mg (allyl)Pd(O_3SCF_3)P(cyclopentyl)$_3$ was dissolved in 8.0 g butylnorbornene and 1.0 g butenylnorbornene. A and B components were mixed at 25°C and the following reaction parameters describe the reaction: t_{gel} = 23 s, $t_{100°C}$ = 26 s, $t_{200°C}$ = 29 s, t_{Tmax} = 40 s, t_{gel} = 58°C, t_{Tmax} = 223°C. A solid object was obtained. Yield by TGA = 96.4%.

Example 196.

A two-component polymerization system was prepared giving a reactant ratio of monomer:procatalyst:activator = 50,000:1:1. Component A: LiWCA-H (1.3 mg) was dissolved in 1.0 g butylnorbornene. Component B: 0.7 mg (allyl)Pd(O_3SCF_3)P(cyclopentyl)$_3$ was dissolved in 9.0 g butylnorbornene. A and B components were mixed at 25°C and the following reaction parameters describe the reaction: t_{gel} = 37 s, $t_{100°C}$ = 49 s, $t_{200°C}$ = 54 s, t_{Tmax} = 1:10 min., t_{gel} = 44°C, t_{Tmax} = 210°C. A solid object was obtained. Yield by TGA = 94.8%.

Example 197.

A two-component polymerization system was prepared giving a reactant ratio of monomer:procatalyst:activator = 100,000:1:1. Component A: LiWCA-H (5.0 mg) was dissolved in 74 g

butylnorbornene. Component B: 2.3 mg (allyl)Pd(O_3SCF_3)P(i-pr)$_3$ was dissolved in 9.0 g butylnorbornene. A and B components were mixed at 40°C and the following reaction parameters describe the reaction: t_{gel} = 18 s, $t_{100°C}$ = 35 s, $t_{200°C}$ = 47 s, t_{Tmax} = 1:00 min., t_{gel} = 58°C, t_{Tmax} = 215°C. A solid object was obtained. Yield by TGA = 86.2%

Example 198.

A two-component polymerization system was prepared giving a reactant ratio of monomer:procatalyst:activator = 100,000:1:2. Component A: LiFABA (8.7 mg) was dissolved in 1.0 g triethoxysilylnorbornene. Component B: 2.3 mg (allyl)Pd(O_3SCF_3)P(i-pr)$_3$ was dissolved in 74 g butylnorbornene. A and B components were mixed at 45°C and the following reaction parameters describe the reaction: t_{gel} = 27 s, $t_{100°C}$ = 52 s, $t_{200°C}$ = 60 s, t_{Tmax} = 1:10 min., t_{gel} = 55°C, t_{Tmax} = 216°C. A solid object was obtained. Yield by TGA = 89.3%

Example 199.

A two-component polymerization system was prepared giving a reactant ratio of monomer:procatalyst:activator = 20,000:1:1. Component A: LiWCA-H (3.2 mg) was dissolved in 1.0 g tetracyclododecadiene. Component B: 1.4 mg (allyl)Pd(O_3SCF_3)(P-i-Pr)$_3$ was dissolved in 9.0 g tetracyclododecadiene. A and B components were mixed at 25°C and the following reaction parameters describe the reaction: t_{gel} = 18 s, $t_{100°C}$ = 27 s, t_{Tmax} = 50 s, t_{gel} = 40°C, t_{Tmax} = 163°C. A solid object was obtained. Yield by TGA = 89.7%.

Example 200.

A two component polymerization system was prepared giving a reactant ratio of monomer:procatalyst:activator = 20,000:1:1. Component A: LiWCA-H (3.4 mg) was dissolved in 1.0 g butylnorbornene. A stock solution of Component B: 15.3 mg (π-allyl)Pd(O_3SCF_3)(P(i-Pr)$_3$) was dissolved in 90.0 g butylnorbornene. Component A was mixed with 9.0 g Component B at 25°C and the following reaction parameters describe the reaction: t_{gel} = 14 s, $t_{100°C}$ = 17 s, $t_{200°C}$ = 22 s, t_{Tmax} = 45 s, T_{gel} = 50°C, t_{Tmax} = 214°C. A solid object was obtained. Yield by TGA = 97.8%.

The stock solution of Component B was stored at room temperature in a dry box in the dark for four months.

A two component polymerization system was prepared giving a reactant ratio of monomer:procatalyst:activator = 20,000:1:1. Component A: LiWCA-H (3.4 mg) was dissolved in 1.0 g butylnorbornene. Component B: 9.0 g "aged" stock solution. A and B were mixed at 25°C and the following reaction parameters describe the reaction: t_{gel} = 22 s, $t_{100°C}$ = 30 s, $t_{200°C}$ = 33 s, t_{Tmax} = 45 s, T_{gel} = 40°C, t_{Tmax} = 213°C. A solid object was obtained. Yield by TGA = 96.9%.

Example 201.

A two component polymerization system was prepared giving a reactant ratio of monomer:procatalyst:activator = 20,000:1:1. Component A: LiWCA-H (3.4 mg) was dissolved in 1.0 g butylnorbornene. Component B: 1.6 mg (crotyl)Pd(O_3SCF_3)(P(i-Pr)$_3$) was dissolved in 9.0 g butylnorbornene. A and B components were mixed at 25°C and the following reaction parameters describe the reaction: t_{gel} = 80 s, $t_{100°C}$ = 90 s, $t_{200°C}$ = 94 s, t_{Tmax} = 110 s, T_{gel} = 38°C, t_{Tmax} = 210°C. A solid object was obtained. Yield by TGA = 97.7%.